

## LIST OF CLAIMS

Claims 2, 5, 11, 15, 23, 25, 28, 37, 40, and 45 were canceled previously.

No claims have been amended.

Claims 1, 3-4, 6-10, 12-14, 16-22, 24, 26-27, 29-36, 38-39, 41-44, and 46-58 are pending as follows:

**1. (previously presented)** Computer-readable storage media encoded with computer-executable instructions that implement a visual query system, comprising:

query criteria of a query expression displayed as shapes that have a semantic relationship which represents logical associations between the query criteria, where a first shape of query criteria is displayed proximate a second shape of query criteria within a visual query definition that includes a visual border to define a Boolean association between the first shape and the second shape that are both displayed within the visual border of the visual query definition;

a query statement generator configured to:

determine the Boolean association corresponding to the semantic relationship of the shapes;

generate a SQL query statement for each shape of query criteria;

combine the SQL query statements according to the Boolean association to generate the query expression;

generate a query result of the combined SQL query statements that form the query expression; and

a user interface configured to display the query result of the query expression.

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**2. (canceled)**

**3. (previously presented)** Computer-readable storage media encoded with computer-executable instructions that implement the visual query system as recited in claim 1, wherein the first shape of query criteria is displayed proximate the second shape of query criteria such that the first shape has an AND Boolean association with the second shape.

**4. (previously presented)** Computer-readable storage media encoded with computer-executable instructions that implement the visual query system as recited in claim 1, wherein the first shape of query criteria is displayed proximate the second shape of query criteria within the visual query definition such that the first shape has an AND Boolean association with the second shape within the visual query definition.

**5. (canceled)**

**6. (previously presented)** Computer-readable storage media encoded with computer-executable instructions that implement the visual query system as recited in claim 1, wherein a first set of query criteria are displayed within the visual query definition, and wherein a second set of query criteria are displayed within an additional visual query definition, the first set of query criteria including the second set of query criteria such that the additional visual query definition is displayed within the visual border of the visual query definition.

1           7.     **(previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 1, wherein:

4           a first set of query criteria are displayed within the visual query definition on the  
5 user interface;

6           a second set of query criteria are displayed on the user interface within an  
7 additional visual query definition, the first set of query criteria including the second set of  
8 query criteria such that the additional visual query definition is displayed within the  
9 visual border of the visual query definition; and

10          the query statement generator is further configured to generate a first query result  
11 of the first set of query criteria and generate a second query result of the second set of  
12 query criteria such that the first query result and the second query result are displayed as  
13 multiple query results.

1           **8. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 1, wherein an additional shape of query criteria is configured for display with the  
4 query criteria, and wherein the query statement generator is further configured to:

5           determine an additional Boolean association corresponding to the semantic  
6 relationship of the additional shape of query criteria;

7           generate an additional SQL query statement for the additional shape of query  
8 criteria;

9           combine the SQL query statements and the additional SQL query statement  
10 according to the additional Boolean association; and

11           update the query result of the combined SQL query statements and the additional  
12 SQL query statement.

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14           **9. (previously presented)** Computer-readable storage media encoded with  
15 computer-executable instructions that implement the visual query system as recited in  
16 claim 1, further comprising data tables that maintain data criteria, and wherein the query  
17 criteria is displayed in user-identifiable terms as metadata that correlates to the data  
18 criteria maintained in the data tables.

1           **10.   (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 1, wherein the user interface is further configured to:

4           display criteria selections that include the query criteria within a criteria selection  
5 display on the user interface;

6           display the shapes of query criteria within the visual query definition on the user  
7 interface; and

8           display the query result within the visual border of the visual query definition on  
9 the user interface.

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11           **11.   (canceled)**  
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1           **12. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement a visual query system, comprising:

3           a visual query definition displayed with a visual border that associates query  
4 criteria of a query expression, the query criteria displayed as shapes within the visual  
5 border of the visual query definition such that proximate positions of the query criteria  
6 define query criteria associations;

7           a query statement generator configured to:

8                   determine a query statement association for each display  
9 relationship of the query criteria;

10                   generate a SQL query statement for each of the query criteria;

11                   combine the SQL query statements according to the query  
12 statement associations to generate the query expression; and

13                   generate a query result of the combined SQL query statements that  
14 form the query expression for display in the visual query definition; and

15           a user interface configured to display the query result of the query expression  
16 within the visual border of the visual query definition on the user interface.

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18           **13. (previously presented)** Computer-readable storage media encoded with  
19 computer-executable instructions that implement the visual query system as recited in  
20 claim 12, wherein the visual query definition is further displayed to associate the query  
21 criteria without logic operators connected between the query criteria.

1           **14. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 12, wherein the query statement generator is further configured to determine the  
4 query statement associations as a Boolean association for each display relationship of the  
5 query criteria.

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7           **15. (canceled)**

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9           **16. (previously presented)** Computer-readable storage media encoded with  
10 computer-executable instructions that implement the visual query system as recited in  
11 claim 12, wherein a first query criteria is displayed proximate a second query criteria  
12 within the visual query definition such that the first query criteria has an AND query  
13 statement association with the second query criteria.

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15           **17. (previously presented)** Computer-readable storage media encoded with  
16 computer-executable instructions that implement the visual query system as recited in  
17 claim 12, wherein a first query criteria is displayed proximate a second query criteria  
18 within the visual query definition such that the first query criteria has an OR query  
19 statement association with the second query criteria.

1           **18. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 12, wherein the visual border of the visual query definition defines the query  
4 statement association between a first query criteria displayed proximate a second query  
5 criteria within the visual query definition.

6  
7           **19. (previously presented)** Computer-readable storage media encoded with  
8 computer-executable instructions that implement the visual query system as recited in  
9 claim 12, further comprising a second visual query definition displayed to associate  
10 additional query criteria of the query expression, wherein:

11           the visual query definition includes the second visual query definition displayed  
12 within the visual border of the visual query definition; and

13           the query statement generator is further configured to generate a second query  
14 result for the second visual query definition such that the query result and the second  
15 query result are displayed as multiple query results.



1           **20. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that implement the visual query system as recited in  
3 claim 12, wherein the visual query definition is further displayed to associate additional  
4 query criteria, and wherein the query statement generator is further configured to:

5           determine an additional query statement association for a display relationship of  
6 the additional query criteria;

7           generate an additional SQL query statement for the additional query criteria;

8           combine the SQL query statements and the additional SQL query statement  
9 according to the additional query statement association; and

10          update the query result of the combined SQL query statements and the additional  
11 SQL query statements.

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13           **21. (previously presented)** Computer-readable storage media encoded with  
14 computer-executable instructions that implement the visual query system as recited in  
15 claim 12, wherein the user interface is further configured to:

16          display criteria selections that include the query criteria within a criteria selection  
17 display on the user interface; and

18          display the query criteria within the visual query definition on the user interface.

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20           **22. (previously presented)** Computer-readable storage media encoded with  
21 computer-executable instructions that implement the visual query system as recited in  
22 claim 12, further comprising data tables that maintain data criteria, and wherein the query  
23 criteria is displayed in user-identifiable terms as metadata that correlates to the data  
24 criteria maintained in the data tables.

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**23. (canceled)**

**24. (previously presented)** Computer-readable storage media encoded with computer-executable instructions that, when executed, display a user interface, comprising:

a criteria selection display of query criteria;

a visual query definition displayed to associate the query criteria of a query expression based on proximate positions of the query criteria in the visual query definition and without logic operators connected between the query criteria, each of the query criteria represented by a shape displayed within a visual border of the visual query definition;

a display attribute of the visual query definition that defines a Boolean association of the query criteria represented by the shapes displayed within the visual border of the visual query definition; and

a query result displayed within the visual border of the visual query definition, the query result generated from a combination of one or more query statements that are combined to generate the query expression, the one or more query statements representing a shape of query criteria and the association of the query criteria.

**25. (canceled)**

1           **26. (previously presented)** Computer-readable storage media encoded with  
2 computer-executable instructions that, when executed, display the user interface as  
3 recited in claim 24, wherein the query criteria are drag-and-drop query criteria from the  
4 criteria selection display to the visual query definition.

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6           **27. (previously presented)** Computer-readable storage media encoded with  
7 computer-executable instructions that, when executed, display the user interface as  
8 recited in claim 24, wherein the visual query definition can be copied to create a second  
9 visual query definition for display on the user interface, and wherein the second visual  
10 query definition is redefined in an event that the visual query definition is redefined.

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12           **28. (canceled)**

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14           **29. (previously presented)** Computer-readable storage media encoded with  
15 computer-executable instructions that, when executed, display the user interface as  
16 recited in claim 24, wherein a color of the visual query definition defines the Boolean  
17 association of the query criteria represented by the shapes displayed within the visual  
18 query definition.

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20           **30. (previously presented)** Computer-readable storage media encoded with  
21 computer-executable instructions that, when executed, display the user interface as  
22 recited in claim 24, wherein the visual border of the visual query definition defines the  
23 Boolean association of the query criteria represented by the shapes displayed within the  
24 visual border of the visual query definition.

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2       **31. (previously presented)** Computer-readable storage media encoded with  
3 computer-executable instructions that, when executed, display the user interface as  
4 recited in claim 24, wherein the one or more query statements are SQL query statements,  
5 and wherein the query result is generated from the combination of the one or more SQL  
6 query statements.

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8       **32. (previously presented)** Computer-readable storage media encoded with  
9 computer-executable instructions that, when executed, display the user interface as  
10 recited in claim 24, wherein a first shape of query criteria is displayed proximate a second  
11 shape of query criteria within the visual query definition such that the first shape has an  
12 AND query statement association with the second shape.

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14       **33. (previously presented)** Computer-readable storage media encoded with  
15 computer-executable instructions that, when executed, display the user interface as  
16 recited in claim 24, wherein a first shape of query criteria is displayed proximate a second  
17 shape of query criteria within the visual query definition such that the first shape has an  
18 OR query statement association with the second shape.

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20       **34. (previously presented)** Computer-readable storage media encoded with  
21 computer-executable instructions that, when executed, display the user interface as  
22 recited in claim 24, further comprising additional query criteria not associated with the  
23 visual query definition and displayed to indicate the non-association.  
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1           **35. (previously presented)**       A method, comprising:  
2           displaying query criteria of a query expression as shapes on a user interface, the  
3           shapes having a semantic relationship which represents logical associations between the  
4           query criteria, the query criteria further displayed as a first set of query criteria within a  
5           visual border of a first visual query definition, and as a second set of query criteria within  
6           a visual border of a second visual query definition such that the first set of query criteria  
7           includes the second set of query criteria;  
8           determining a query statement association for each display relationship of the  
9           shapes of query criteria;  
10          generating a SQL query statement for each shape of query criteria;  
11          combining the SQL query statements according to the query statement  
12          associations to generate the query expression; and  
13          displaying a query result of the query expression within the visual border of the  
14          first visual query definition on the user interface.

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16          **36. (original)** A method as recited in claim 35, wherein determining the  
17          query statement associations includes determining a Boolean association corresponding  
18          to each display relationship of the shapes of query criteria.

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20          **37. (canceled)**

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22          **38. (original)** A method as recited in claim 35, further comprising displaying  
23          criteria selections that include the query criteria in a criteria selection display on the user  
24          interface.

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2       **39. (previously presented)** A method as recited in claim 35, further  
3 comprising generating the query result of the combined SQL query statements that form  
4 the query expression.

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6       **40. (canceled)**

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8       **41. (previously presented)** A method as recited in claim 35, wherein  
9 displaying the query criteria as shapes includes displaying a first shape of query criteria  
10 proximate a second shape of query criteria within the first visual query definition such  
11 that the first shape has a Boolean association with the second shape.

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13       **42. (previously presented)** A method as recited in claim 35, wherein  
14 displaying the query criteria as shapes includes displaying a first shape of query criteria  
15 proximate a second shape of query criteria within the first visual query definition such  
16 that the first shape has an AND Boolean association with the second shape.

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18       **43. (previously presented)** A method as recited in claim 35, wherein  
19 displaying the query criteria as shapes includes displaying a first shape of query criteria  
20 proximate a second shape of query criteria within the first visual query definition that is  
21 bordered to define an OR Boolean association between the first shape and the second  
22 shape.

1           **44. (original)** A method as recited in claim 35, wherein displaying the query  
2 criteria includes displaying the query criteria in user-identifiable terms as metadata that  
3 correlates to data criteria maintained in data tables.

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5           **45. (canceled)**

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7           **46. (previously presented)** A method as recited in claim 35, further  
8 comprising:

9           adding additional query criteria as a shape on the user interface;

10           determining an additional query statement association for a display relationship of  
11 the additional shape of query criteria;

12           generating an additional SQL query statement corresponding to the additional  
13 shape of query criteria;

14           combining the SQL query statements and the additional SQL query statement  
15 according to the additional query statement association; and

16           updating the query result displayed on the user interface to include the additional  
17 query criteria.

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19           **47. (original)** A method as recited in claim 46, wherein adding the additional  
20 query criteria includes dragging-and-dropping the additional query criteria on the user  
21 interface.

1           **48. (previously presented)** A method as recited in claim 35, further  
2 comprising generating an audible indication corresponding to at least one of a display of  
3 the query result on the user interface or an update of the query result displayed on the  
4 user interface.

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6           **49. (previously presented)** One or more computer readable storage media  
7 comprising computer executable instructions that, when executed, direct a computing  
8 device to perform the method of claim 35.

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10           **50. (previously presented)** One or more computer readable storage  
11 media comprising computer executable instructions that, when executed, direct a  
12 computing device to:

13           display a visual query definition to associate query criteria of a query expression,  
14 the query criteria displayed as shapes having display relationships within a visual border  
15 of the visual query definition;

16           determine a query statement association for each shape of query criteria according  
17 to the display relationships;

18           generate a query statement for each shape of query criteria;

19           combine the query statements according to the query statement associations to  
20 generate the query expression;

21           generate a query result of the combined query statements that form the query  
22 expression; and

23           display the query result within the visual border of the visual query definition on a  
24 user interface.



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2       **51. (previously presented)** One or more computer readable storage media as  
3 recited in claim 50, further comprising computer executable instructions that, when  
4 executed, direct the computing device to determine the query statement association for  
5 each shape of query criteria as a Boolean association.

6  
7       **52. (previously presented)** One or more computer readable storage media as  
8 recited in claim 50, further comprising computer executable instructions that, when  
9 executed, direct the computing device to generate the query statement for each shape of  
10 query criteria as a SQL query statement.

11  
12       **53. (previously presented)** One or more computer readable storage media as  
13 recited in claim 50, further comprising computer executable instructions that, when  
14 executed, direct the computing device to display criteria selections that can be added to  
15 the visual query definition.

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17       **54. (previously presented)** One or more computer readable storage media as  
18 recited in claim 50, further comprising computer executable instructions that, when  
19 executed, direct the computing device to display a first shape of query criteria proximate  
20 a second shape of query criteria within the visual query definition such that the first shape  
21 has a Boolean association with the second shape.

1           **55. (previously presented)** One or more computer readable storage media as  
2 recited in claim 50, further comprising computer executable instructions that, when  
3 executed, direct the computing device to display a first shape of query criteria proximate  
4 a second shape of query criteria within the visual query definition such that the first shape  
5 has an AND Boolean association with the second shape.

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7           **56. (previously presented)** One or more computer readable storage media as  
8 recited in claim 50, further comprising computer executable instructions that, when  
9 executed, direct the computing device to display a first shape of query criteria proximate  
10 a second shape of query criteria within the visual query definition that is bordered to  
11 define an OR Boolean association between the first shape and the second shape.

12  
13           **57. (previously presented)** One or more computer readable storage media as  
14 recited in claim 50, further comprising computer executable instructions that, when  
15 executed, direct the computing device to display a first set of query criteria within the  
16 visual query definition, and display a second set of query criteria within a second visual  
17 query definition such that the visual query definition includes the first set of query criteria  
18 and the second set of query criteria.

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20           **58. (previously presented)** One or more computer readable storage media as  
21 recited in claim 50, further comprising computer executable instructions that, when  
22 executed, direct the computing device to generate an audible indication corresponding to  
23 an update of the query result displayed within the visual query definition.  
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